

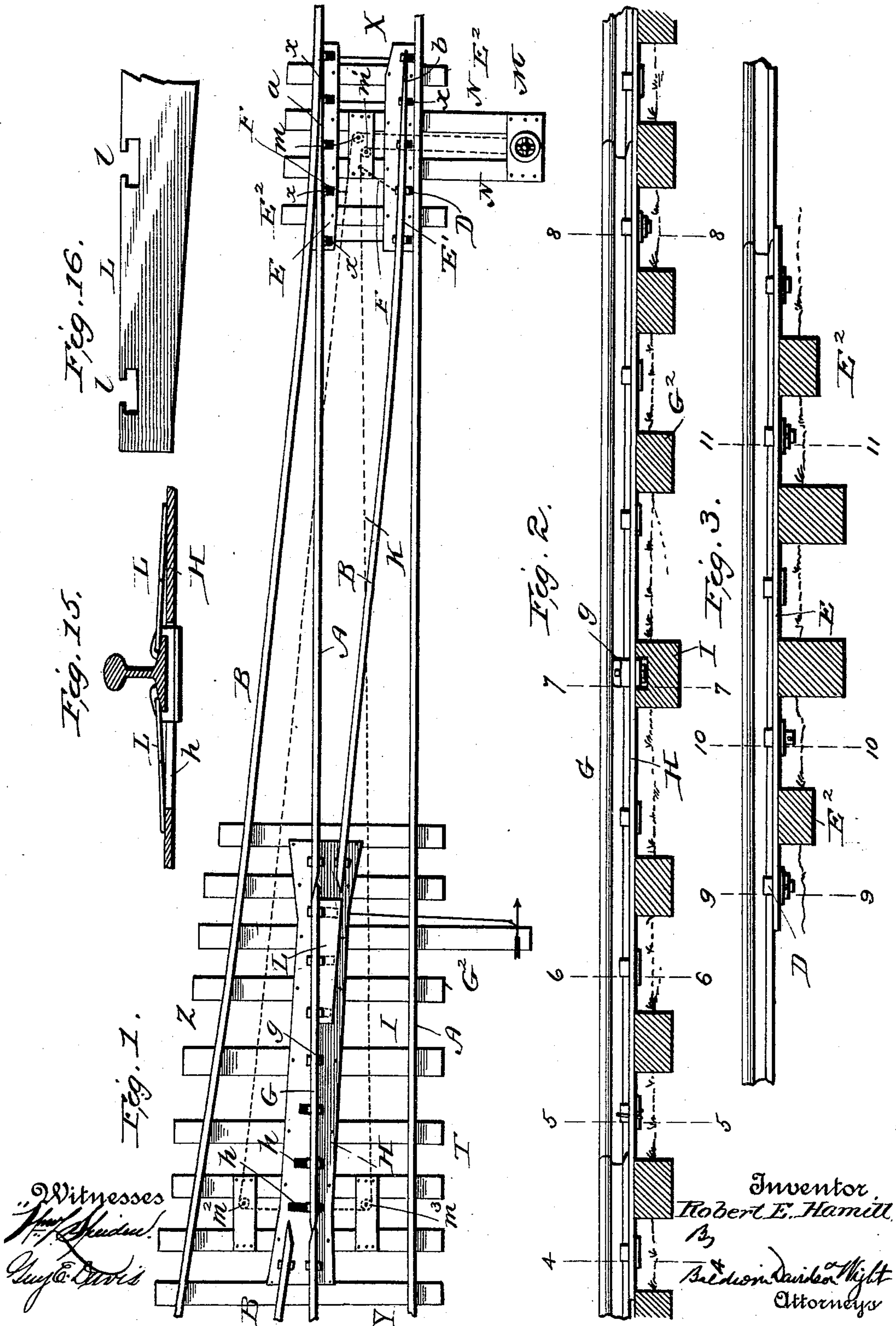
(No Model.)

3 Sheets—Sheet 1.

R. E. HAMILL.
RAILWAY SWITCH.

No. 542,253.

Patented July 9, 1895.



(No Model.)

3 Sheets—Sheet 2.

R. E. HAMILL.
RAILWAY SWITCH.

No. 542,253.

Patented July 9, 1895.

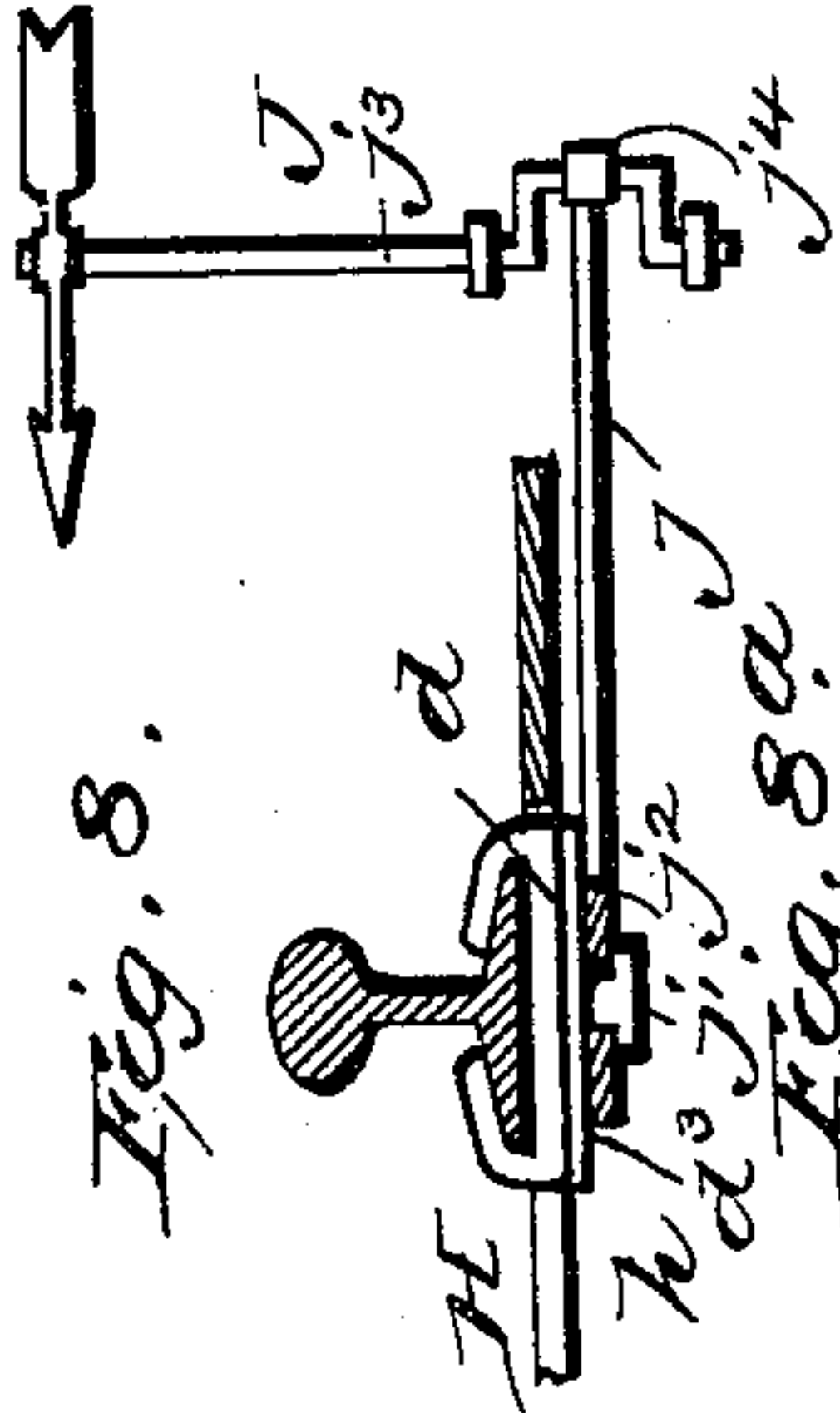


Fig. 8.

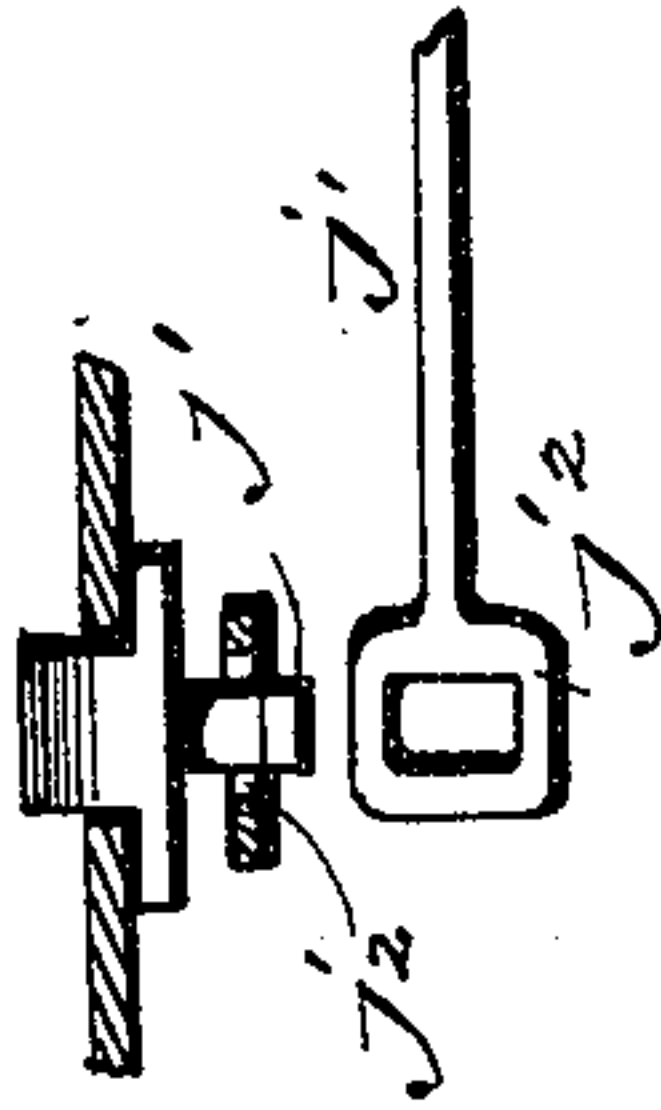


Fig. 8a.

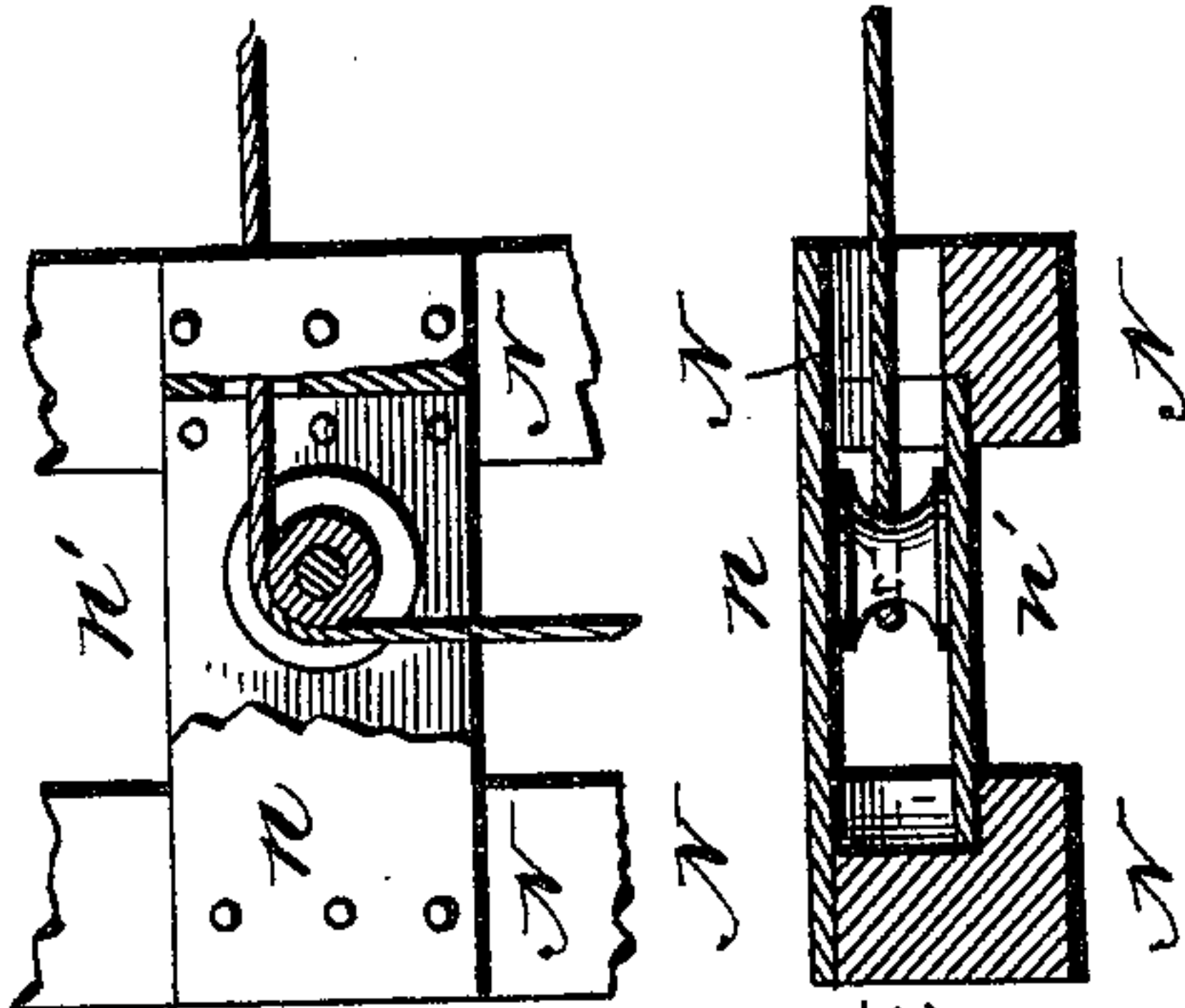


Fig. 13.

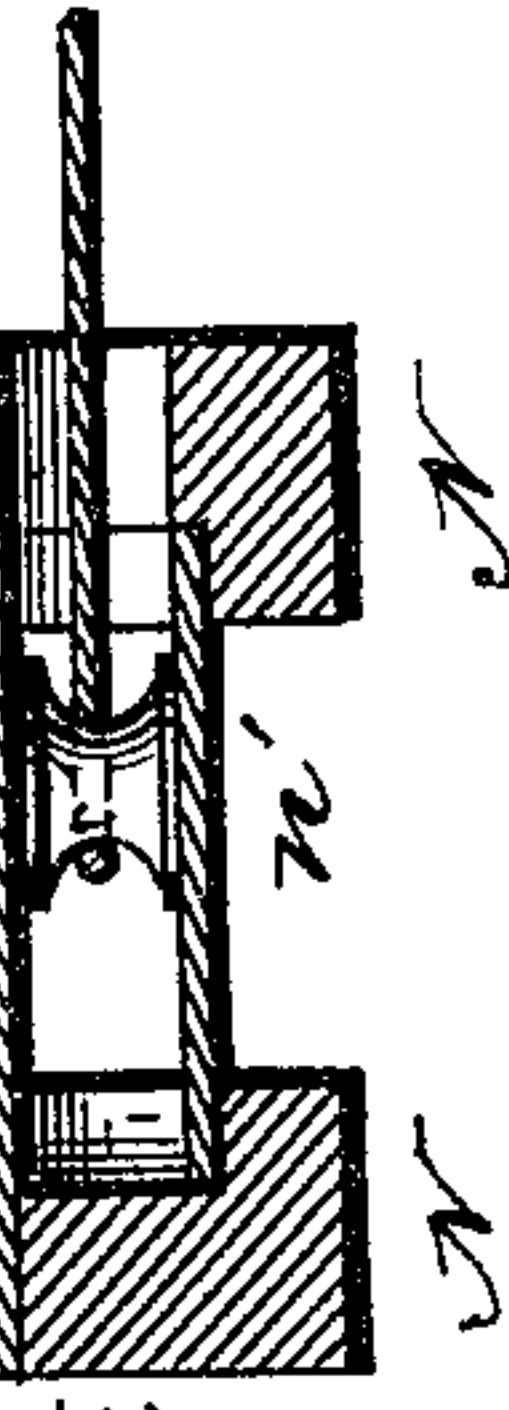


Fig. 14.

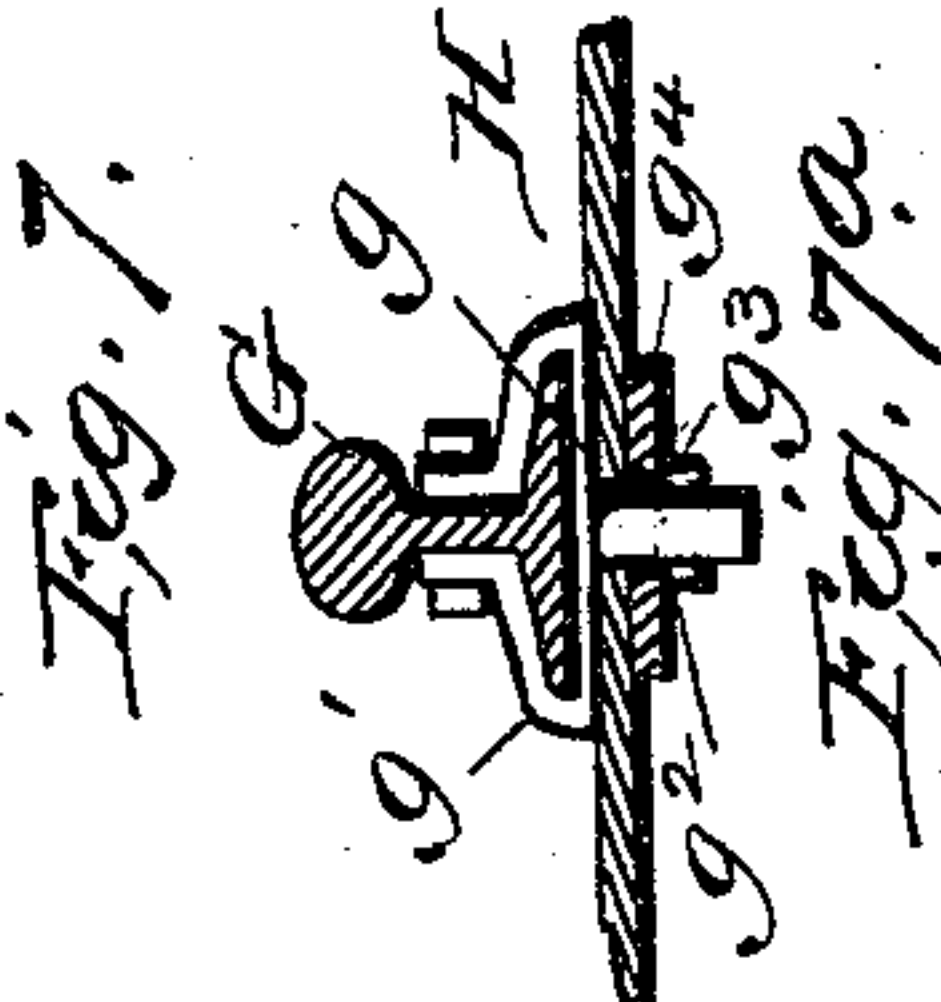


Fig. 7.

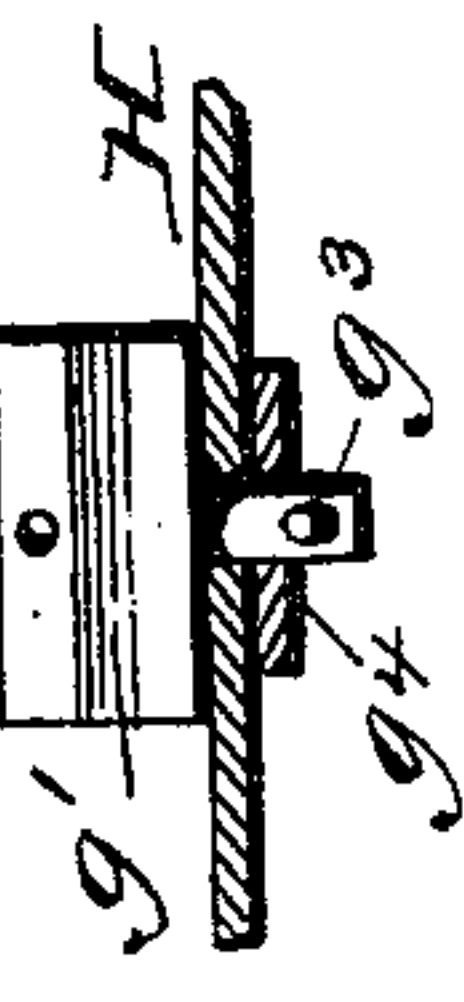


Fig. 7a.

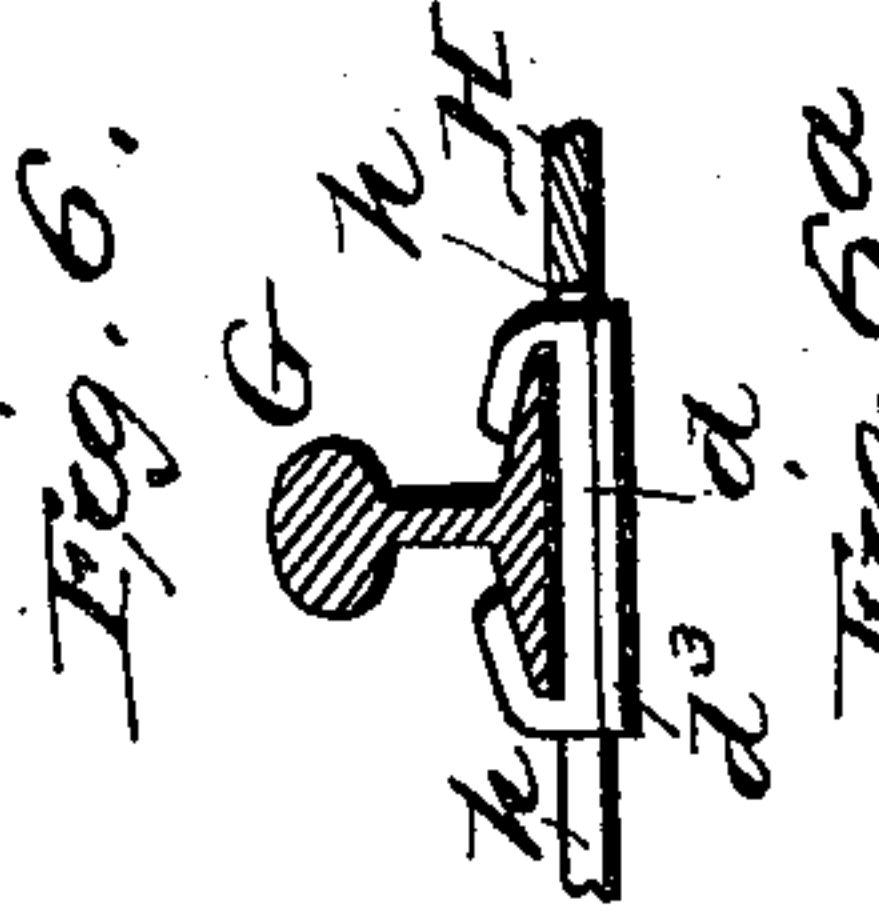


Fig. 6.



Fig. 6a.

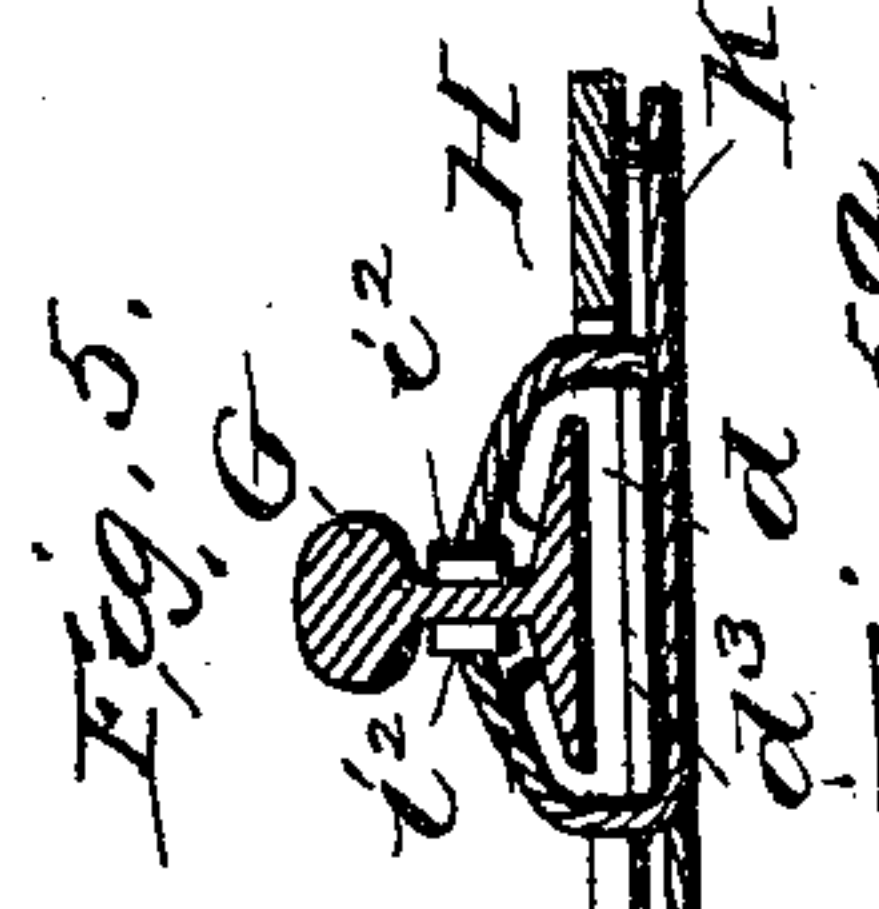


Fig. 5.



Fig. 5a.

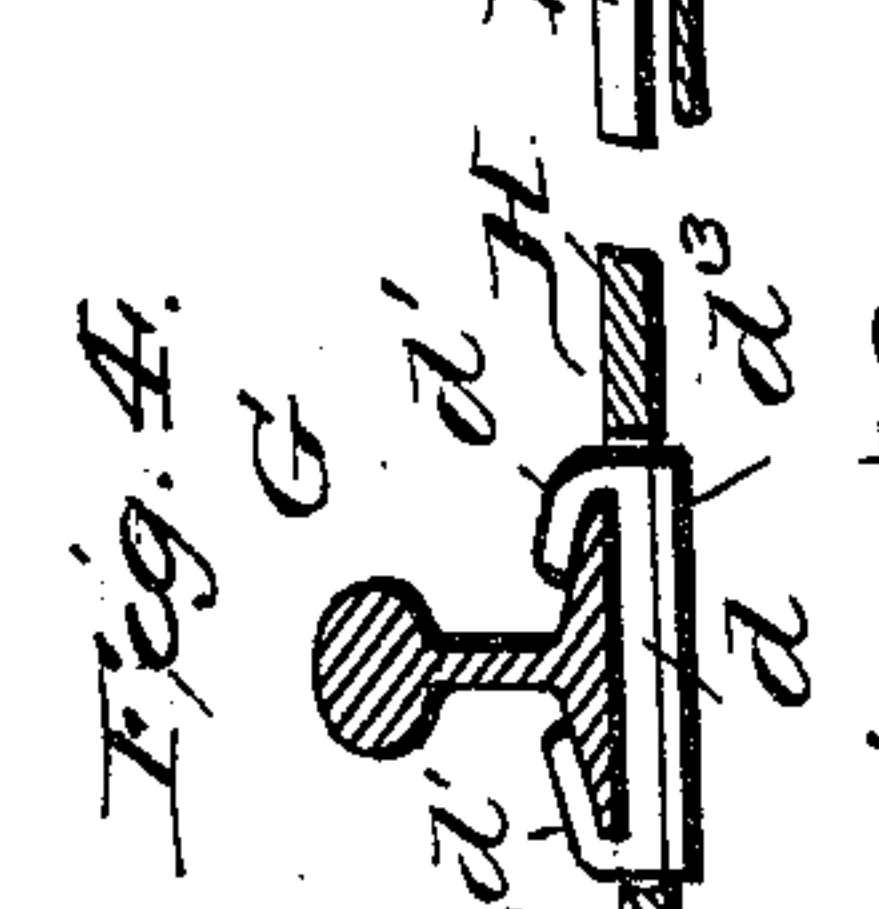


Fig. 4.



Fig. 4a.

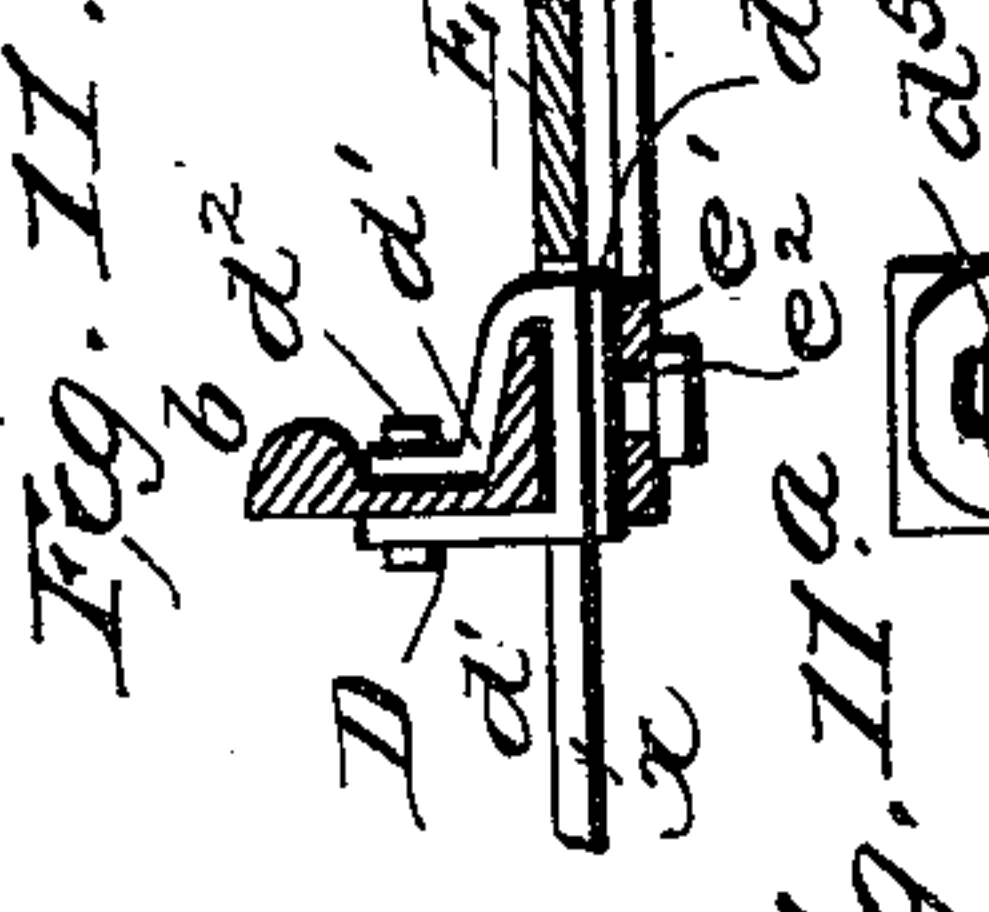


Fig. 11.



Fig. 11a.

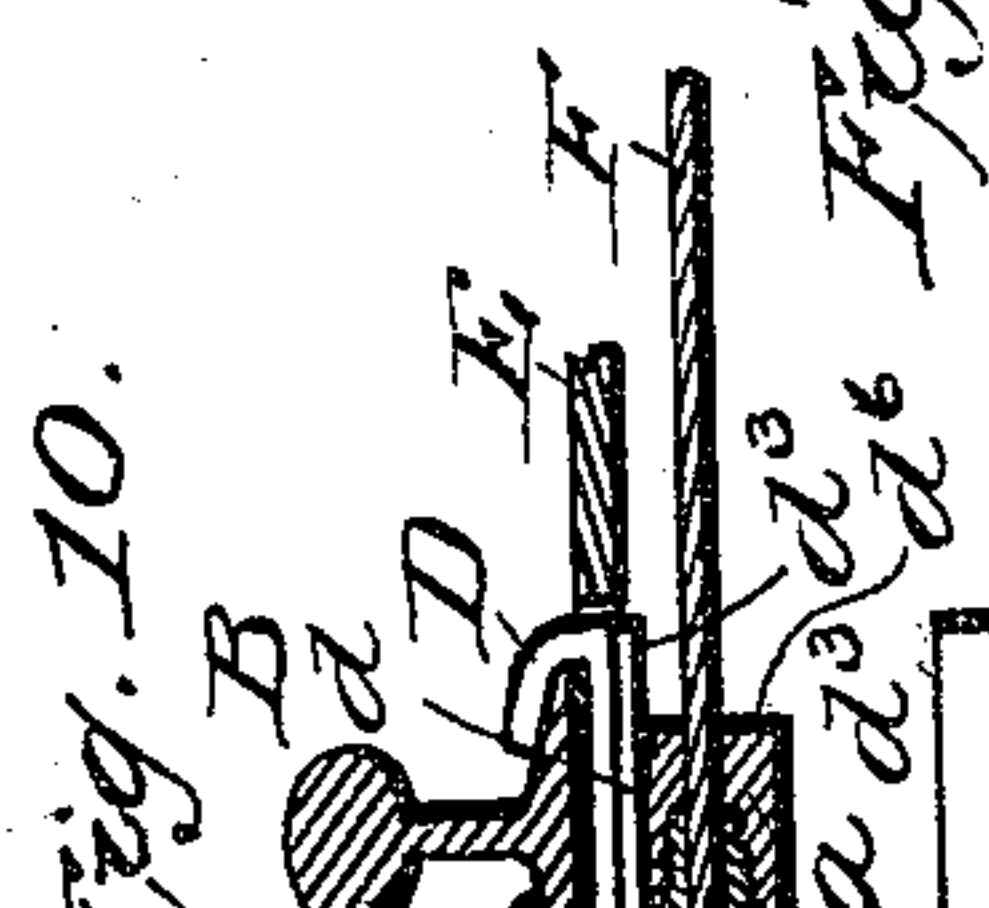


Fig. 10.



Fig. 10a.

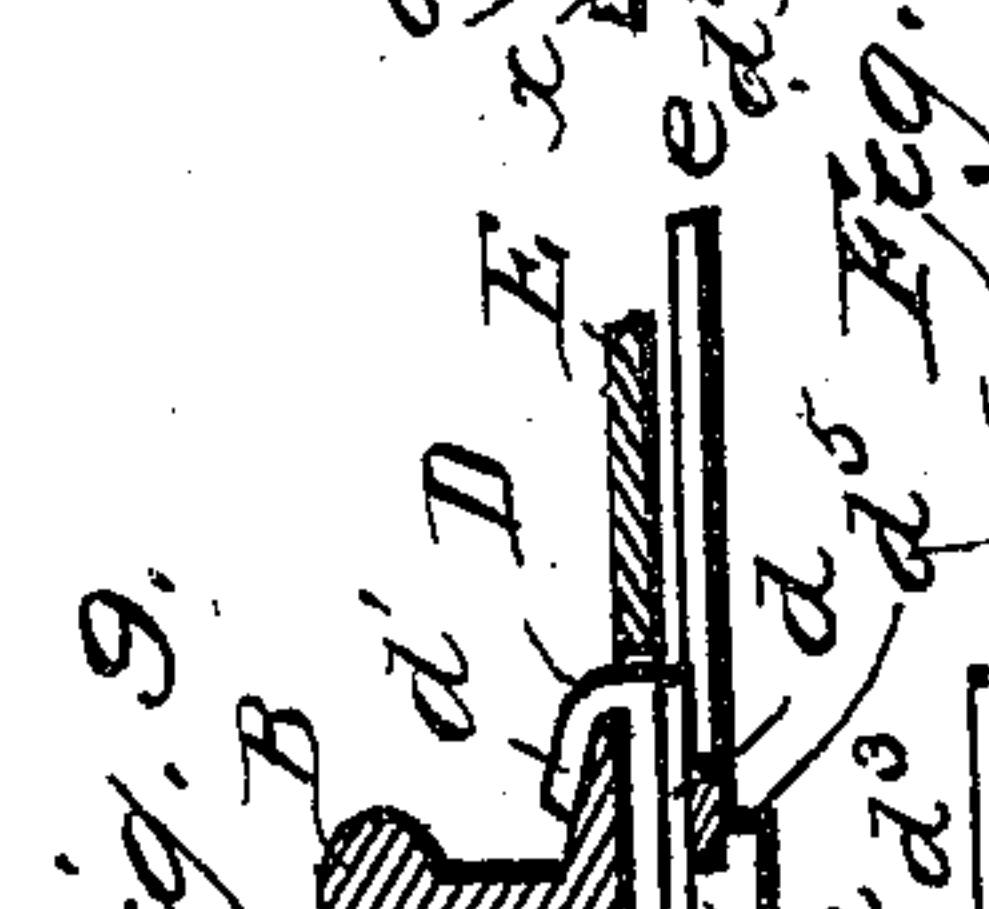


Fig. 9.

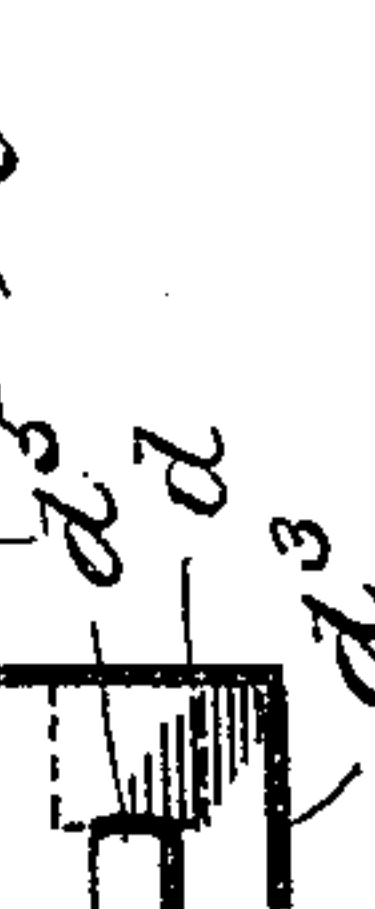


Fig. 9a.

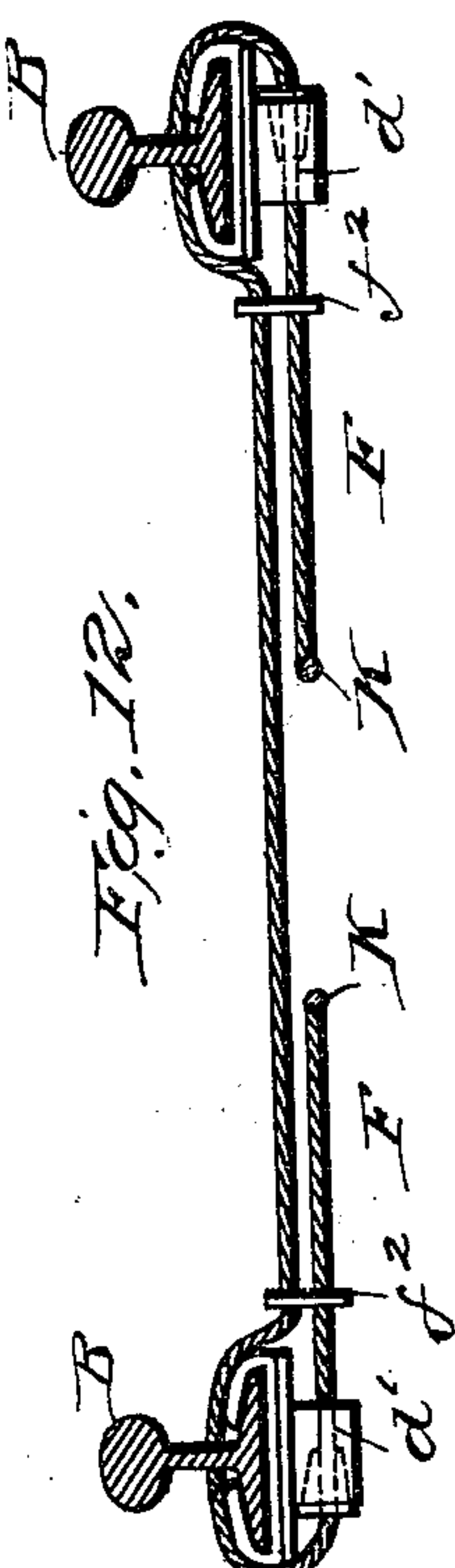


Fig. 12.

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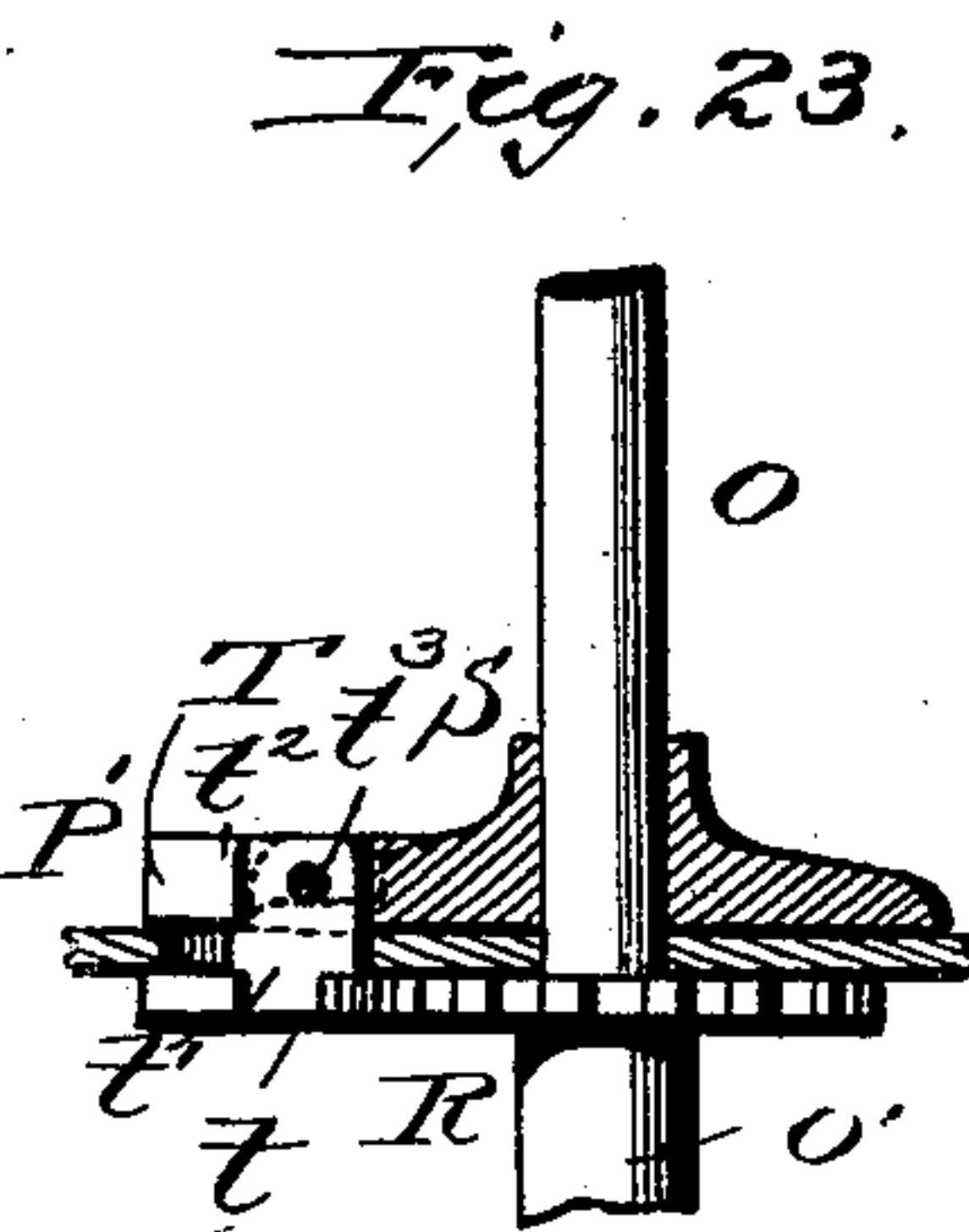
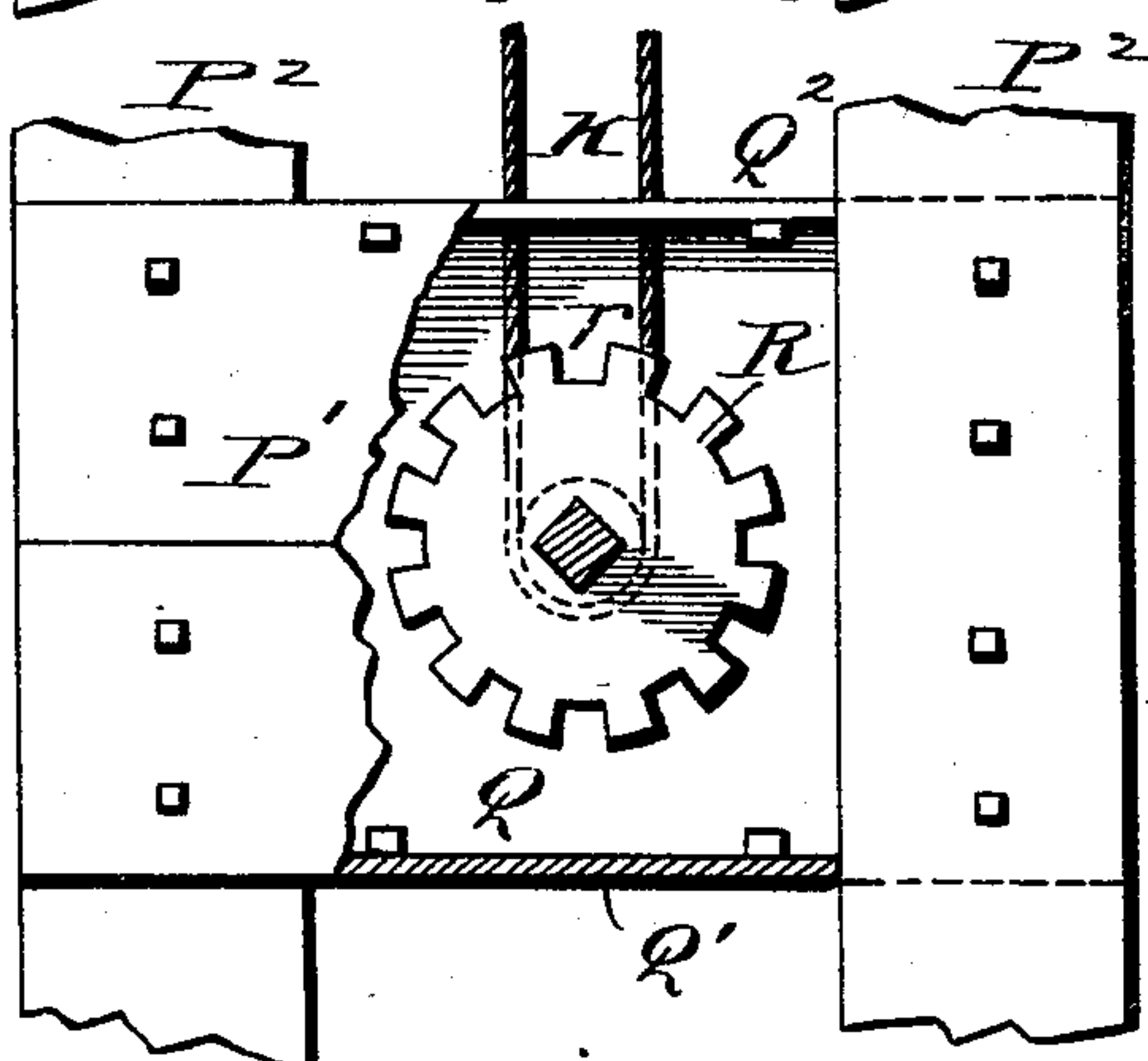
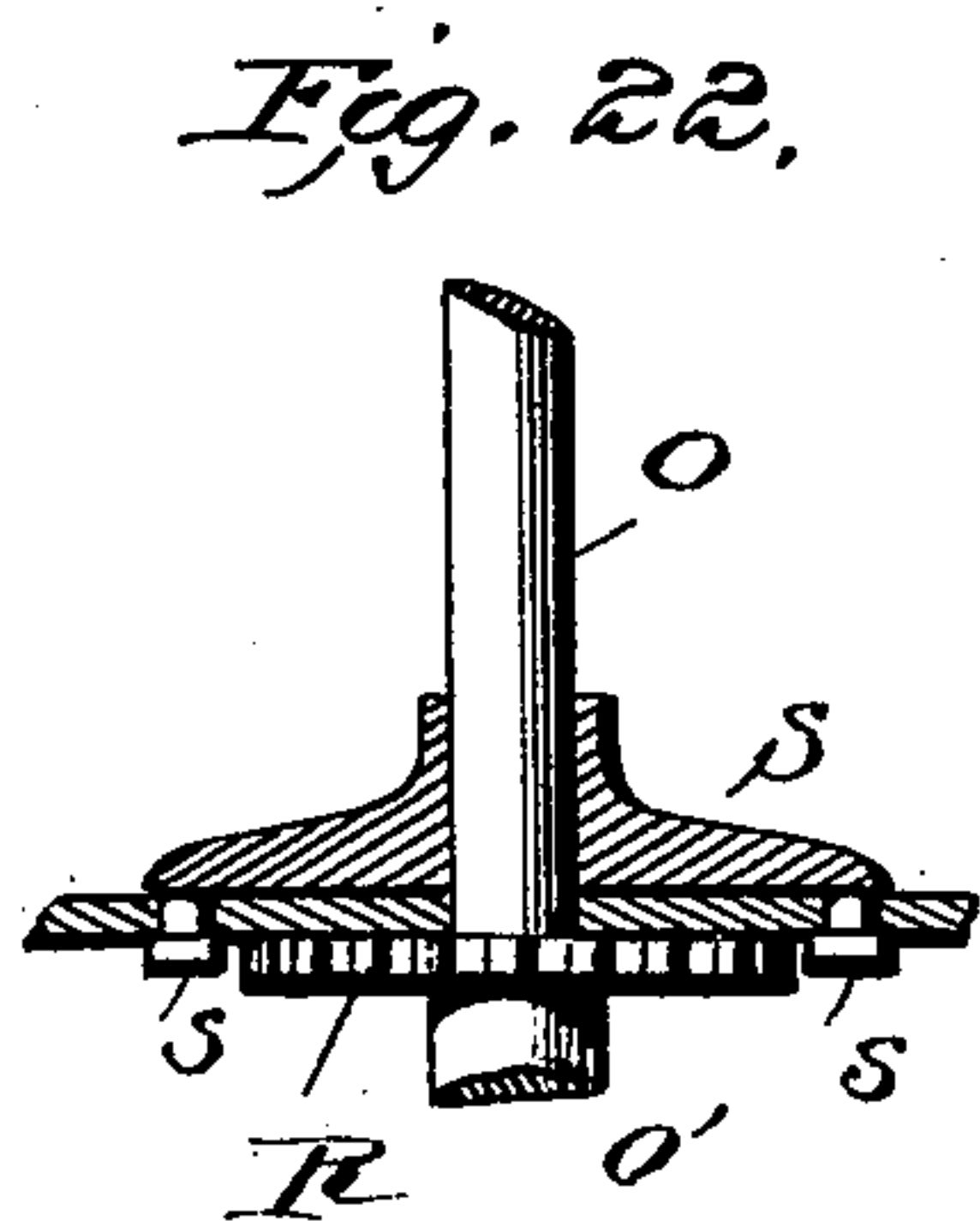
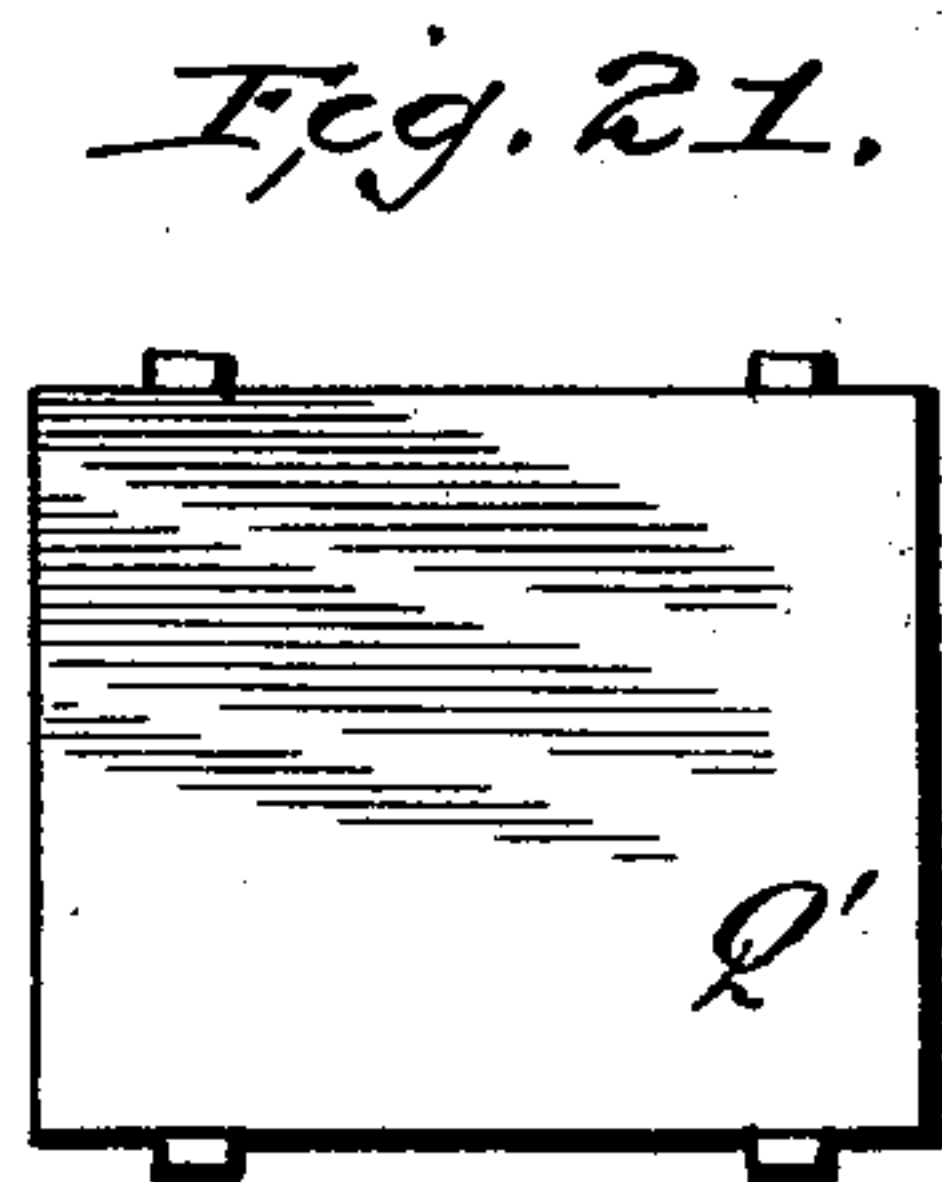
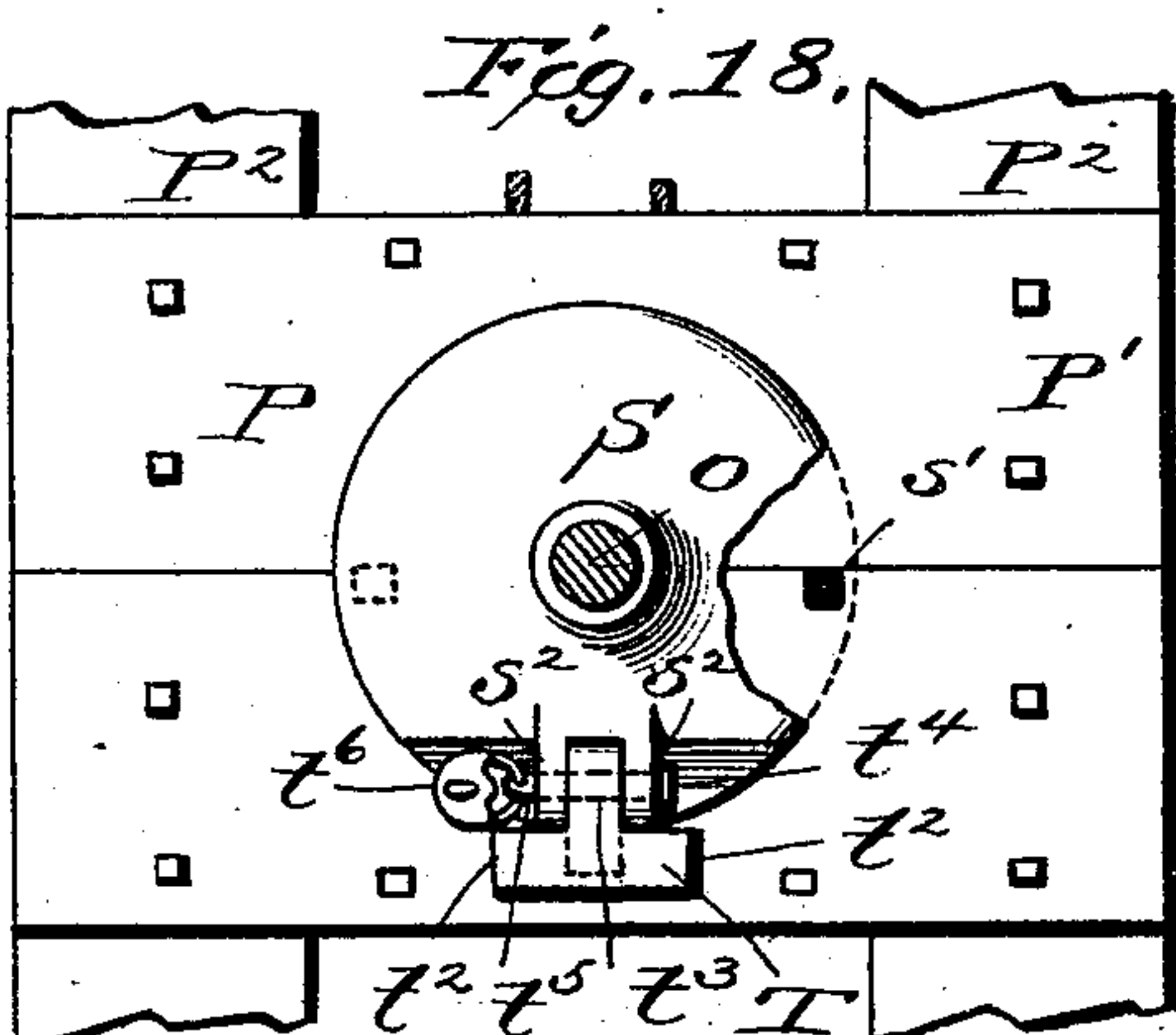
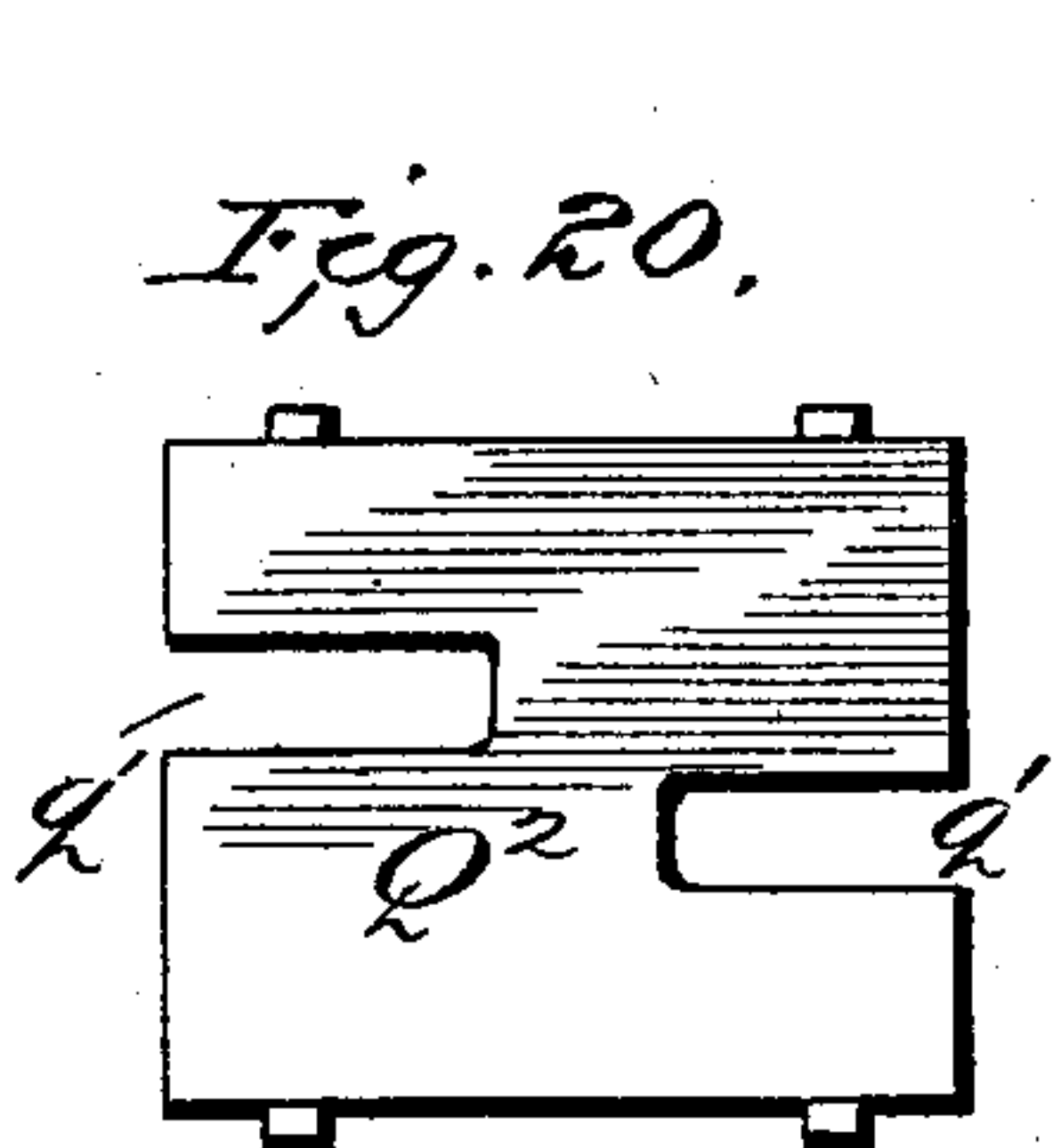
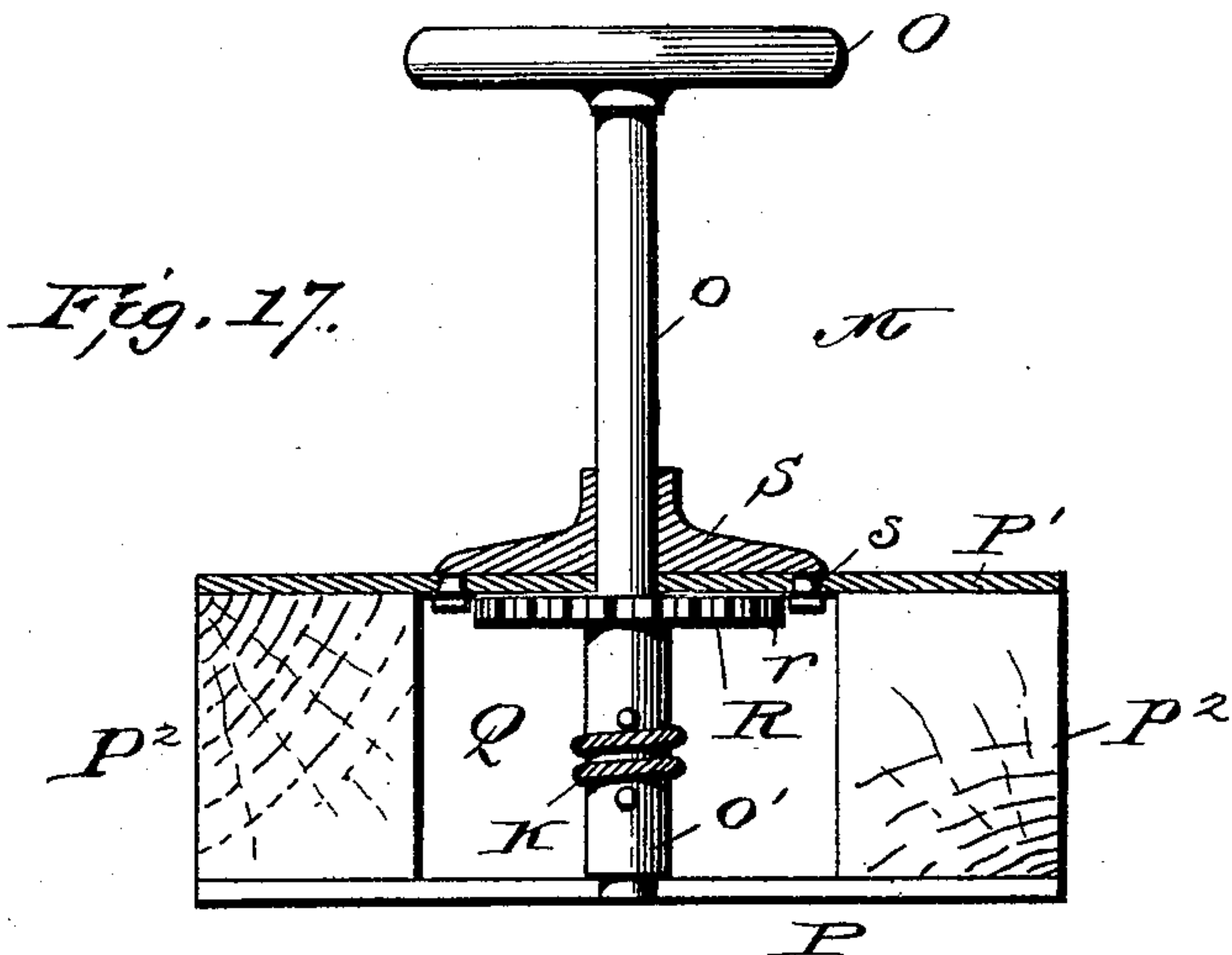
(No Model.)

3 Sheets—Sheet 3.

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Witnesses
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Attorneys

UNITED STATES PATENT OFFICE.

ROBERT E. HAMILL, OF MARSHALL, ILLINOIS.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 542,253, dated July 9, 1895.

Application filed March 21, 1895. Serial No. 542,678. (No model.)

To all whom it may concern:

Be it known that I, ROBERT E. HAMILL, a citizen of the United States, residing at Marshall, in the county of Clark and State of Illinois, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification.

The object of my invention is to provide improved means for operating railway-track switches. This I do by mounting the free ends of the switch-rails on plates transversely slotted to receive chairs, to which the rails are secured and which slide back and forth when positively operated in the guide-slots of the plates. The chairs are provided with devices which lock them to the plates and prevent movement thereof, except in the line of the guide-slots. At the opposite end of the switch I provide a pivoted frog-rail adapted to be shifted to align with either the main track or siding. This rail-section is pivoted to a plate provided with transversely-arranged guide-slots to receive chairs secured to the pivoted rail. A cable operated by mechanism at a switch-stand is connected with the free ends of the switch-rails and also with the pivoted rail, and by this cable the switch may be set for either the main track or the siding.

The organization of the mechanism employed and the details of construction are hereinafter fully described, and are shown in the accompanying drawings, in which—

Figure 1 is a diagram showing in plan a railway-track switch constructed and organized in accordance with my invention. Fig. 2 is a view, on an enlarged scale and in side elevation, of the pivoted frog-rail, showing how it is connected with its supporting-plate and how the plate is mounted on the cross-ties. Fig. 3 is a detail view, on an enlarged scale, showing a side elevation of one of the split rails and the manner in which it is connected with its supporting-plate. Figs. 4 to 11, inclusive, show cross-sections on the correspondingly-numbered dotted lines in Figs. 2 and 3. Figs. 4^a to 11^a, inclusive, show detail views of the chairs employed for connecting the rails to their supporting-plates and also the devices employed for connecting the chairs to the target-operating rod, the operating-cable, and the tie-rods. Fig. 12 is a view, on an enlarged scale, of a modified way of

connecting the operating-cable with the free ends of the switch-rails. Figs. 13 and 14 are detail views of the guide-pulleys and their mountings. Fig. 15 is a view in section showing weather plates or shields connected with a chair and extending over the guide-slot. Fig. 16 is a detail view showing a plan of one of the shields. Fig. 17 is a view, partly in section and partly in elevation, of the switch-stand having the cable-operating mechanism. Fig. 18 is a detail view in plan of the switch-stand, the operating-shaft being shown in section. Fig. 19 is a similar view with the top plates broken away to show the locking-wheel. Figs. 20 and 21 show, respectively, the front and back plates of the switch-stand. Fig. 22 is a detail view in section showing the means of connecting the top plate of the switch-stand with a guide-hub for the operating-shaft. Fig. 23 is another view of the same, showing the latch carried by the hub and engaging with the locking-wheel.

A indicates the rails of the main track, and B the rails of the siding. One of the rails A of the main track is split at *a*, and a corresponding rail of the siding is split at *b*. These rails are spring-rails and may be shifted laterally so as to connect the main track at the end marked X with either the part Y of the main track or the part Z of the siding.

In order to support the ends of the split rails and guide them in the slots *x* of the plates E and E', I secure them to chairs D, as shown in Fig. 1 and in detail in Figs. 9 to 11, inclusive. These chairs may be of any suitable construction, but preferably of the form shown in Figs. 9 to 11 and Figs. 9^a to 11^a. Each chair has a body portion *d* extending under the rail and through the slot *x* in the plate E. It has also upwardly-extending wings *d'*, which project over the base of the rail and fit it snugly. The portion *d* and the wings *d'* are approximately of the same width as the slot *x*. Figs. 9 and 10 show substantially the same construction so far as the parts *d* and *d'* are concerned. Fig. 11 shows a similar construction; but the wings *d'* are prolonged upwardly and are suitably shaped to fit the split rail, a bolt *d*² being employed to secure the upper ends of the two branches *d'* to the web of the rail. The bottom portion *d* of each chair is provided on opposite sides

with laterally-projecting wings d^3 , that extend beyond the edges of the slots x and prevent the chair from rising too high. This construction is clearly shown in the bottom plan views, Figs. 9^a and 10^a. It is also shown in Figs 4^a and 5^a. By this arrangement I am enabled to insert the chairs from below the plates and extend the wings d' upwardly through the slots for attachment to the rails.

The chairs, as will be observed by reference to Fig. 1, are located between the cross-ties. On the under side of the chair D (shown in Fig. 9) is formed a button consisting of a shank d^4 and an enlarged head d^5 . To this button is connected a tie-rod e , the construction of which is more clearly shown in Fig. 11^a. It has an enlarged head e' at each end with an elongated slot e^2 , which when turned in one direction can pass over the head d^5 , but when given a quarter turn is spanned by the head, as indicated. The buttons in Figs. 9, 9^a, and 11 are of precisely the same construction, and chairs so constructed are used for supporting the two split rails and are connected by a suitable number of tie-rods. The chair shown in Figs. 10 and 10^a is similar to that above described, except that in place of the button I employ a lug d^6 , secured to the bottom of the chair and extending downwardly therefrom. This lug is provided with a screw-threaded socket d^7 to receive a split taper-nut d^8 , which is secured by a nut d^9 to the cable F. The plates E E' may be made of iron, steel, or other suitable material and are formed with the slots x , above described, and with holes to receive spikes which secure them to cross-ties or sleepers E². The slots are located between the cross-ties, as above stated, and may be slightly curved to permit the chairs to move freely when the rails are shifted.

The pivoted frog-rail G at the opposite end of the switch is mounted on a plate H, secured by spikes to the cross-ties G². The rail G is centrally pivoted at g to the plate H above a cross-tie I, which may be recessed, as shown in Fig. 2, to accommodate the pivot-fastenings. The details of the pivot are shown in Figs. 7 and 7^a. As there shown, a chair g' is firmly secured to the rail and is provided on its under side with a shank g^2 , that extends through an opening in the plate H. A bolt g^3 extends transversely through the lower end of the shank, and a washer g^4 is interposed between the bolt and the plate H. The bottom of the chair, (shown in Fig. 7,) it will be observed, lies on the top of the plate H, thus raising the rail G above the plate and permitting of easy pivotal movement.

The plate H is provided with a series of slots h , in which are fitted chairs for supporting the frog-rail at various points. The slots are located between the cross-ties I and G², and the chairs are constructed, as shown in Figs. 4 to 8 and Figs. 4^a to 8^a, in a somewhat similar manner to that shown in Fig. 9—that is, they have portions d below the rail, wings

extending up through the slots h and over the bases of the rails, and flanges or wings d^3 below the slots. Fig. 8 shows a chair adapted to connect with a rod j , that operates a signal-target J. The bottom d is provided with a downwardly-projecting button j' , having an enlarged head and adapted to interlock with a slot j^2 in the enlarged end of the rod j . The upright shaft j^3 of the target J is provided with a crank j^4 , by means of which the reciprocation of the rail will turn the target.

The chair shown in Fig. 5 is like the others, except that on its under face it is provided with grooves i , to accommodate the main operating-cable K, and also with grooves i' on its upper side to accommodate the turn in this cable. Fastening devices i^2 may be employed on opposite sides of the web of the rail through a perforation in which the loop of the cable passes.

The opposite ends of the pivoted rail G are beveled, as shown in Fig. 1, in order to connect with the beveled ends of the rails of the main track and siding, with which the pivoted rail comes in contact. These rails are beveled or inclined in one direction only, as shown, while the ends of the frog-rail are beveled in opposite directions to properly connect with the rails, and also to prevent the wheels of the train from catching as they pass.

In order to prevent dirt, ice, &c., from entering and filling the slots, I may employ a guard plate or shield L. This may be of the construction shown in Figs. 15 and 16, and is secured to the chairs that support the shifting rail. As shown in Fig. 16, the plate L is provided with slots l , shaped to fit over the tops of the chairs, to permit the plate to flex to some extent thereon. The plates extend over the slots h and are adapted to move along over the surface of the plate H. Similar shields may be used for covering the slots in the plates E and E'.

In order to operate the switch, I employ a cable K. This is connected to a switch-stand M and extends around pulleys $m m'$ at one end of the switch and pulleys $m^2 m^3$ at the opposite end of the switch. The pulleys are preferably mounted as shown in Figs. 13 and 14, the cross-ties N being recessed, as shown, and provided with top and bottom plates $n n'$, between which the plates are mounted. The cable is connected to the end of the pivoted rail in the manner shown in Fig. 5. As there shown, the cable K extends under the chair, thence over the chair, and through the web of the rail, and down under the chair again. At the opposite end of the switch the cable is connected by the short lengths of cable F to the split rails, preferably in the manner shown in Fig. 10 and as before described; but the connection may be such as indicated in Fig. 12, where, instead of merely passing the cables F through the perforations d^7 and securing their ends by taper-nuts, I continue the cable around over the chairs and through the webs of the rails. Loops f^2 are employed to

connect the upper and lower branches of the cable to hold them parallel and close together. Either of these constructions is suitable; but other arrangements may be employed for connecting the main cable with the split rails.

The details of the switch-stand are shown in Figs. 17 to 23, inclusive. As there shown, an operating-wheel O is secured to a vertical shaft *o*, provided with an enlargement *o'*, about which the cable K is wound. The lower end of the shaft is mounted in a bottom plate P, and the shaft also extends through a top plate P' over the casing of the enlargement *o'*. The top plate rests on beams P², arranged a suitable distance apart to accommodate the winding mechanism. The chamber Q, in which the winding mechanism is inclosed, is closed at its rear end by the plate Q' (shown in Fig. 21) and at its front end by the plate Q², (shown in Fig. 20,) and which is provided with slots *q'*, through which the two branches of the cable extend, as shown in Fig. 19. Just below the plate P' on the shaft *o* is secured a locking-wheel R, provided with a peripheral series of teeth *r*. Above the plate P' is secured to the shaft a hub S, that is provided with lugs *s*, extending through slots *s'* in the plate P'. The lugs *s* are headed so that they cannot rise through the slots, and the plate P' is made in two sections, being divided in line with the slots *s'*, as shown in Fig. 18, so that when the cover is secured it may be so secured as to firmly hold the hub S in place. A latch T is employed to lock the wheel R to the top plate P' and hub S. This latch is formed with a downwardly-projecting lug *t*, extending through a slot *t'* in the plate P' and adapted to engage with the teeth of the wheel R. Above the plate P' the latch is formed with laterally-extending arms *t*², that extend over the slot *t'* and are adapted to slide back and forth over the plate to engage the lug *t* with the wheel or to disengage it therefrom. A flange on the lower end of the lug prevents it from rising out of the slot. The hub S is formed with arms *s*², between which the latch is adapted to pass when it is moved toward the wheel R. These arms, and also the inner end of the latch, are perforated and adapted to receive a bolt or pin *t*³, which is headed at *t*⁴ and perforated at *t*⁵ to receive an ordinary padlock *t*⁶. The bolt is inserted when the latch is interlocked with the wheel. When the bolt is removed the latch may be slid away

from the wheel to unlock it, and the wheel O may be turned to adjust the switch as desired. The mechanism thus constructed may be operated to actuate the switch to connect with either the main track or the siding. As shown in Fig. 1 of the drawings, the main track is closed, the siding being opened or disconnected from the main track. If now the mechanism at the switch-stand is operated to draw the cable toward the right around the pulley *m*², the pivoted rail G will be shifted from the position shown in Fig. 1 to the opposite position to connect with the other rails, and the split rails will be correspondingly shifted, the rail next the switch-stand, as viewed in Fig. 1, being brought close to the adjacent rail of the main track, while the split rail on the opposite side will be withdrawn from the corresponding rail of the main track.

I claim as my invention—

1. The combination of a rail, a slotted plate on which it is mounted, a chair having wings extending over the base of the rail, a body portion uniting the flanges, wings projecting laterally from the body portion below the slot, and a lug or projection extending downwardly from the body portion, for the purpose specified.

2. The combination of the pivoted rail, the split rails, plates on which they are mounted, guide slots in the plates below the rails, chairs having wings embracing the bases of the rails on opposite sides, body portions uniting the wings and extending through the slots of the plates, and rods connected to the body portions of the chairs and connecting chairs on opposite rails.

3. The combination of the pivoted rail, the shifting switch rails, the cable for operating them and the switch-stand consisting of an upright shaft around the lower end of which the cable is wound, a locking wheel secured to said shaft and provided with a series of peripheral teeth, a locking block or latch secured by a bolt to the frame of the switch-stand, and a locking device extending through the bolt for the purpose specified.

In testimony whereof I have hereunto subscribed my name.

ROBERT E. HAMILL.

Witnesses:

T. J. GOLDEN,
ADAM R. GORD.